6.0 NMFS RECOMMENDATION ON THE DESCRIPTION AND IDENTIFICATION OF EFH

NMFS FINAL Recommendations
for the
Identification and Description
of ESSENTIAL FISH HABITAT
for
Species of the Fishery Management Plans
of the
North Pacific Fishery Management Council

This document contains the NMFS final recommendations for the identification and description of essential fish habitat (EFH) for species managed under the fishery management plans (FMPs) of the North Pacific Fishery Management Council (NPFMC). This document also provides NMFS endorsements of other components of the EFH FMP amendment requirements as provided in the interim final rule implementing the EFH provisions of the Magnuson-Stevens Fishery Conservation and Management Act (62 Fed. Reg. 66531; December 19, 1997).

Development of NMFS EFH Recommendations: Public Involvement Process

The Magnuson-Stevens Act and the EFH regulatory guidelines require NMFS to consult with the Councils, participants in the fishery, interstate commissions, Federal agencies, state agencies, other interested parties and the public in general while developing written recommendations for the identification of EFH. Prior to submitting final EFH recommendations, the regulatory guidelines require NMFS to make draft recommendations for public review available and to hold a public meeting at which the public can comment.

To meet these requirements, the NMFS Alaska Region established a Core Team in April 1997. The Core Team is composed of NMFS employees and one person from the NPFMC staff. The NPFMC, working with the Core Team, developed a tasking plan which established four technical teams (for salmon, crab, scallop and groundfish). The technical teams were comprised of biologists from the NPFMC, NMFS, the Alaska Department of Fish and Game (ADF&G) and from the USDA Forest Service. All are Federal or state agencies responsible for managing the species covered by the specific FMP or for managing the habitats essential to these species. The technical teams developed habitat assessment reports for each FMP , which were distributed for public comment in December 1997. Updated versions were made available on March 31, 1998. These reports, which form the basis of NMFS's final recommendation, are titled:

- Essential Fish Habitat Assessment Report for the Groundfish Resources of the Bering Sea and Aleutian Islands Regions
- Essential Fish Habitat Assessment Report for the Groundfish Resources of the Gulf of Alaska Region
- Essential Fish Habitat Assessment Report for the Bering Sea and Aleutian Islands King and Tanner Crabs
- Essential Fish Habitat Assessment Report for the Scallop Fisheries Off the Coast of Alaska
- Essential Fish Habitat Assessment Report for the Salmon Fisheries in the EEZ off the

Coast of Alaska.

The Core Team directed the activities of the technical teams and reviewed, commented on and sometimes supplemented their reports. The Core Team held four meetings between May 1997 and March 1998: May 20 - 22, 1997, in Juneau; July 15 - 17, 1997, in Juneau; October 21-23, 1997 in Seattle; and March 2 - 5, 1998, in Juneau. The meetings were open to the public and the public was encouraged to participate. In these meetings the Core Team discussed how to meet the EFH requirements of the Magnuson-Stevens Act, reviewed the information compiled by the technical teams, and made the necessary assignments to gather more information as necessary. On March 4 and 5, 1998, NMFS-only members of the Core Team met to develop the NMFS draft EFH recommendation. The meeting was not open to the public on these two days. The Core Team also had teleconferences as necessary. In general, because of time constraints, the public was not notified or encouraged to participate in these teleconferences.

In addition to Core Team meetings, evening public meetings were held in various communities around the state. These meetings were as follows: February 5, 1997, in Anchorage, to discuss the proposed rule to establish EFH regulatory guidelines in accordance with Section 3D5(b)(1) of the Magnuson-Stevens Act; February 6, 1997, in Kodiak, to discuss the proposed rule; May 21, 1997, in Juneau, to discuss the proposed rule; February 4, 1998, in Anchorage, to discuss the effects of fishing on fish habitat; February 5, 1998, in Anchorage, to discuss the draft habitat assessment reports and other information compiled for EFH, and to discuss the interim final rule; March 3, 1998, in Juneau, to discuss the EFH information and documents and the interim final rule.

EFH was an agenda item on the Council's December 1996, February 1997, June 1997, February 1998, and April 1998 meetings. At the February 1998 Council meeting, members of the Core Team gave public presentations on the habitat assessment reports prepared by the technical teams to the Council, its Scientific and Statistical Committee (SSC) and its Advisory Panel (AP). Comments provided by the Council, the SSC, the AP, and the public were subsequently incorporated into the habitat assessment reports. During the February Council meeting, a public meeting was held the evening of February 4, 1998, at which one of the authors of a paper analyzing the impacts of fishing gear on habitat presented their preliminary findings for discussion. The following evening, a public EFH workshop was held on the status of EFH development for the Alaska Region. Questions and comments were invited on the development of EFH and on the draft EFH documents. Many of the comments received during this week were incorporated into the preliminary habitat assessment reports.

At the April 1998 Council meeting, the Core Team again gave presentations to the Council, the SSC, AP and the public during Council and committee discussions and also at an evening EFH workshop. The presentations focused on the draft NMFS EFH recommendations, including textual descriptions of EFH for each species life stage, levels of information for each life stage, and the draft Environmental Assessment (EA). Comments from the Council, SSC, AP and the public on the draft NMFS recommendations and EA were provided to the Core Team. Those comments are incorporated into the final NMFS recommendations and supporting documents. The NMFS Alaska Regional office also received two comment letters on the draft EFH recommendations, which are attached to this document for Council review.

For each of the public meetings mentioned above, efforts were made to reach as many interested parties as possible, including non-fishing entities. Based on the foregoing activities, NMFS has met the public participation requirements of the Magnuson-Stevens Act and the EFH regulatory guidelines in developing the EFH recommendations contained in this document.

Explanation of Key Concepts

In terms of process, the formation of the NMFS recommendations was guided by the application of a four-tiered typology of information, and the development of a definition of "general distribution" suitable for serving as the basis for identifying EFH.

Levels of Information

NMFS's EFH guidelines provide a typology of information (Levels 1 to 4) for classifying available information on the distribution of a life stage. The technical teams deemed it necessary to also define "Level 0" information as a subset of Level 1. Level 0 is intended to define a level of knowledge less than Level 1, which requires presence/absence data sufficient for applying analyses of frequency of occurrence. Level 0 information is defined by the Groundfish Technical Team as: "No systematic sampling has been conducted for this species and life stage; may have been caught opportunistically in small numbers during other surveys." The BSAI Crab Technical Team used nearly the same definition for Level 0, but specified "research" surveys.

In general, Level 0 classification was used in the following situations:

a) some information on a species' life stage upon which to infer general distribution;
b) no information on the life stage, but some information on a similar species or adjacent life stages from which to infer general distribution; or
c) no information on the actual species' life stage and no information on a similar species or adjacent life stages, or where complexity of a species stock structure prohibited inference of general distribution.[1]

Thus, in some cases EFH for a species life stage was inferred using Level 0 (a) and (b) information. However, EFH was not inferred for Level 0 (c), cases where no information was available on the actual species' life stage and no information was available on a similar species or adjacent life stages, or where stock structure prevented inference from adjacent life stages or other species. Cases where no information exists on a particular species' life stage, nor on similar species or adjacent life stages from which a general distribution might be inferred, were considered research priorities if the species at that life stage was likely to depend on habitat at risk from human activities. (Please note that the technical teams' definitions of Level 0 may differ slightly, depending on how they applied the concept using available information on a particular FMP species.)

At the April 1998, NPFMC meeting, the SSC and the Council asked NMFS to clarify the definition and use of the sub-tiers of Level 0 information**.** This discussion of Level 0 and the attached description and identification of EFH provide clarification. For species life stages that have Level 0 information the EFH definition is identified as Level 0_a, Level 0_b, or Level $0_{c;}$ no EFH definition is provided for Level 0_c. Supporting summary tables are appropriately footnoted.

General Distribution

[1] This explanation of Level 0 supersedes prior descriptions of Level 0 in supporting documents.

The technical teams determined that information of Levels 0 and 1 was available for most life stages. Information of Level 2 was generally available for adult life stages. Higher levels of information (Levels 3 & 4) were available for some life stages of salmon in some regions of Alaska. From this information, the technical teams provided estimates of the general distributions and known concentrations for their respective species. The determinations of general distribution and known concentration were done independently by each technical team. In each case, a general distribution of a species' life stage was defined as a subset of its current and historic range, and as the geographic area containing most of the individuals across all seasons. Thus, general distribution is not a proxy for, but rather a subset of range, and varies in size depending on the species.

When defining EFH the Core Team looked at all life stages of all FMP-managed species. From these life history traits, the Alaska Region Core Team found the overall distribution to be all waters -- marine, estuarine, and riverine -- to the headwaters of freshwater systems. To avoid defining EFH to be inclusive of all waters, the NMFS members of the Alaska Region Core Team narrowed the definition of EFH to a general distribution. The term "general distribution"does not include the entire species range, but denotes areas where most of the individuals are found, or where one would reasonably (with a high probability) expect to find a certain life stage of that species. General distribution encompasses approximately 95 percent of the total population.

The estimation of general distribution varied among technical teams in regard to the level of information. For example, for life stages with information Level 0, (a) and (b), the Salmon and Groundfish Technical Teams decided there was enough information available to infer general distribution (except for some forage fish species). For a life stage lacking direct information, general distribution was inferred from information on a similar species or distribution of an adjacent life stage. The methods for determining the salmon and groundfish general distributions and known concentrations are indicated in the respective habitat assessment reports. While differing slightly in process due to differences in type of data sources and habitat, the results are similar in degree of inclusiveness for similar amounts of information.

The Scallop Technical Team felt there was enough information to infer general distribution for species life stages with Level 0 information, except for the larval stages of Pink, Spiny, and Rock Scallops. The Crab Technical Team provides habitat association information for many species life stages; however, it made no inference of the geographic general distribution for any life stages with Level 0 information. While the lesser degree of inference in the Crab Technical Team recommendations is due in part to less information and a lesser degree of inclusiveness, inferring general distribution for crab is more complex due to the apparent stock structure of crabs. Up to five different stocks per crab species are identified in the Bering Sea, while for groundfish only one stock per species is identified. The general distributions of adjacent species or life stages where knowledge is at Level 2 tend to show discrete distributions in crab, compared to more contiguous distributions of groundfish. Thus interpolating or extrapolating inferred distributions is a more complex process for crab stocks. The Salmon and Groundfish technical teams inferred general distribution when some information was available upon which to make an inference. However, general distribution for some forage species was not inferred for life stages when there was no information on the life stage itself and no information on adjacent life stages or similar life stages of similar species. Thus, for Level 0_c life stages, general distribution is not provided and EFH is not defined.

Known Concentrations

Known concentrations were defined only for life stages for which Level 2 knowledge is available. (Level 2 information was only available for certain adult stages in the case of groundfish and shellfish, and certain life stages for salmon).

NMFS FINAL EFH RECOMMENDATIONS

The documents and explanations listed above comprise the basis of the NMFS final EFH recommendations and preliminary endorsements that follow.

Final Recommendation for Identification and Description of EFH

The NMFS members of the Alaska Region Core Team considered the alternatives of using general distribution or known concentrations to define EFH for species' life stages for which Level 2 or higher information is available. A principal concern was that using known concentrations alone to designate EFH would not ensure that adequate areas were protected as EFH. NMFS supports the conclusions of the technical teams and the conclusions of the NMFS members of the Alaska Region Core Team concerning the use of general distribution rather than known concentration to define EFH and has adopted their rationale as the basis for the NMFS final recommendation.

The NMFS final recommendation for identification and description of EFH is:

> **EFH is defined as all habitat within a general distribution for a species life stage, for all information levels and under all stock conditions. A general distribution area is a subset of a species range. For any species listed under the Endangered Species Act, EFH includes all areas identified as "critical habitat."**

The NMFS final recommendation for the identification and description of EFH corresponds to Alternative 2 of the draft EFH EA.

NMFS based this recommendation on the following rationale:

C Areas of known concentrations based on current information do not adequately address unpredictable annual differences in spatial distributions of a life stage, nor changes due to long-term shifts in oceanographic regimes.

Groundfish and salmon provide examples of this rationale. Annual differences in distribution of high concentrations of adults, particularly for pelagic or semi-demersal species (e.g., pollock, Pacific cod) occur and are unpredictable. Within the last 20 years, during which most data have been obtained, long-term changes in concentrations have been observed in Alaska groundfish. The spawning distribution of Gulf of Alaska pollock has changed dramatically since the 1970s. Relative distribution of the Alaska sablefish stock between the Bering Sea, Aleutian Islands, and the Gulf of Alaska has cycled since the late 1970s.

Habitat productivity for salmon also varies cyclically with natural long-term disturbance regimes, so that a particular watershed may have low productivity after an event such as a major flood, followed by a period of higher productivity. Locations of salmon concentrations in freshwater, estuarine, and marine habitats may change unpredictably, so

that current areas of known concentration would not adequately cover required habitat.

Regime shifts in ocean conditions due to climate change can also cyclically affect physical conditions, abundance of food or predators, and, as a result, the distribution and survival of salmon. Current areas of known concentrations, therefore, may not adequately cover required habitats. For example, a regime shift in the climate of the North Pacific Ocean in the 1970s altered the distribution and production dynamics of salmonids. The upper thermal limit of the distribution of steelhead in the high seas increased after the regime shift, and this change in distribution is thought to have been caused by increased ocean productivity and increased intensity of the Aleutian Low pressure system. The best model fitting changes in the productivity of Bristol Bay sockeye salmon included a one-time change in the parameters of the Ricker stock and recruitment model, which first affected the 1972 brood year. Unpredictability of such regime shifts and limited knowledge of how salmon respond to such changes in ocean conditions necessitate a conservative description of essential fish habitat.

A growing body of evidence indicates that such a regime shift is currently underway, and is associated with further significant declines in marine survival of salmon in the Pacific Northwest and British Columbia. Alaska salmon stocks are also affected; a dramatic 45% reduction occurred in the commercial harvest over the past 2 years (218 million fish caught in 1995; 121 million in 1997). Designating only habitat with current high abundance or productivity as EFH ignores the implications of such short- and long-term cycles.

C All habitats occupied by a species contribute to production at some level. Although contributions from individual locations may be small, collectively they can account for a significant part of total production. For example, fisheries for coho and pink salmon depend on the cumulative production from thousands of small streams that are widely distributed across coastal Alaska.

C A stock's long-term productivity is based on both high and low levels of abundance, and the entire general distribution may be required during times of high abundance. The total recruitment history, both high and low levels, are used in the estimation of biological reference points for many of the groundfish species managed by the NPFMC. These reference points are intended to relate to the stock's long-term productivity. $B_{40\%}$, for example, is often considered a default or surrogate for the biomass that would produce MSY.

For example, salmon use a broader range of freshwater habitat during periods of high abundance. The broad range and diversity of salmon habitats must be conserved to provide for periods of abundance, as well as to avoid severely reduced production during poor years. Similarly, high concentrations of rock sole were found in only two discrete areas of the southeastern Bering Sea during periods of low abundance (early 1980s), but were found throughout regions with 100 m water depth in times of high abundance (mid 1990s).

C Survey information, upon which descriptions of known concentrations are primarily based, is limited to certain seasons (chiefly summer), while the general distribution is based on the best available scientific information, as well as fishery and local knowledge of a life stage.

- No discrete basis exists, or no threshold is defined, to distinguish between known concentrations and general distribution of a species' life stage.
- Observed concentrations or densities do not necessarily reflect all habitat required to maintain healthy stocks within the ecosystem.
- From a scientific perspective, no rationale was found to identify areas outside of a known concentration as non-essential for maintaining healthy production levels without extensive knowledge of habitat-related linkages to productivity and the ecosystem. Substantial rationale exists, however, to justify an inclusive definition of EFH using general distribution.
- The advice in the NMFS guidelines to use the best scientific information available in a risk-averse fashion and employ an ecosystem approach suggests that, unless the information indicates otherwise, the more inclusive general distribution should be used to designate EFH. From the examples above, it is clear that density knowledge alone (Level 2 information) would be insufficient to determine that the habitat encompassed by general distribution is not essential to maintain healthy stocks and ecosystems and sustain productive fisheries. While it may be possible to make such a determination at higher levels of knowledge, NMFS is not making such a determination at this time.
- In the case of juvenile and adult salmon in marine waters, our greater knowledge of their habitat utilization indicates that they are indeed distributed over a larger expanse of the Pacific Ocean than is encompassed by the EEZ. As scientists obtain more knowledge on certain species, as in the case of salmon, they are learning that salmon spatial habitat requirements can actually be much greater and not as concentrated as one might expect. This broad geographic distribution of essential habitats provides the prey species important for their growth and maturation as well as the habitat diversity required in times of changing environmental conditions.

With respect to Alternative 3 in the EA, it would only be possible to delineate areas of known concentration of salmon in some watersheds. First, one would identify watersheds with sufficient information and then delineate areas of known concentration within the watersheds. This would only be possible for a small number of watersheds, and generally only for adult salmon. It could be done for juvenile salmon in a few watersheds. For marine habitat, some areas of known concentration have been identified, but current information is not comprehensive and mainly reflects migration habitat. Most ocean areas have not been adequately surveyed, so that it is not possible to identify areas of concentration that are essential for growth and survival of maturing and adult salmon.

In response to comments received on the NMFS draft recommendations some changes have been made in EFH has been described or displayed. These changes include depiction of salmon EFH and clarification of EFH when Level 0 information is available.

Salmon EFH

We recommend that the Council not include the marine maps previously submitted for salmon. We would like to substitute the maps attached to this document, for the following reasons:

Areas of known concentration of maturing and adult salmon in the marine environment have been identified for some species based on bycatch in fisheries, such as chinook, sockeye, and chum salmon bycatch in the Bering Sea trawl fishery. These known concentrations, however, reflect points where fish become concentrated on migration routes from the open ocean to fresh water

(e.g., Unimak Pass); they do not indicate exceptional habitats necessary for rearing and maturing. In addition, NMFS research has identified the area off Prince William Sound to Kodiak Island as a possible area of concentration of chum salmon in summer. Current knowledge of salmon distribution in the ocean is inadequate to identify other concentrations or areas of exceptional production.

The concept of "areas of known concentration" as used for marine EFH applies differently to salmon in fresh water. In fresh water, concentrations of salmon reflect locations of specific habitats for spawning, rearing, and migration that are patchily distributed on a finer scale (at the reach level) within watersheds. Freshwater habitat is very heterogeneous, and at a local level, depends on geomorphic, vegetative, hydrologic, and other factors, and also varies along the "river continuum" from headwaters to river mouth. Therefore, the distribution of habitat and fish within specific watersheds must be considered on a case-by-case basis to identify areas of concentration. Such areas of concentration, usually of spawning adult salmon, have been identified for a small number of specific river systems that have been intensively surveyed, primarily in Southeast (Region I), Southcentral (Region II); and Southwestern (Region III) Alaska. By radio tagging, for example, NMFS research has identified areas of concentrated chinook and sockeye salmon spawning in the Taku River, which could be considered areas of known concentration. For the vast majority of watersheds, however, information is insufficient to identify areas of known concentration, particularly for juvenile salmon.

The general distribution of salmon in fresh water includes virtually all the coastal streams to about 70° N latitude. Maps of documented salmon occurrence in fresh water (representing only a subset of salmon EFH) are available in the ADF&G stream Atlas. These maps show presence/absence of anadromous fish in areas that have been surveyed, but do not show fish densities, and therefore, they do not depict areas of known concentration.

Alternative 3

For clarification, NMFS wants the Council and the public to understand that the Descriptions and identification of EFH are written to describe the general distribution of a species life stage. The legal EFH definition is the written or text definition. For most species life stages the text is supported with maps. Maps were drawn for species with Level 1 or higher information. No maps are provided for those life stages with Level 0 information. For species with Level 2, or higher information, known concentrations are drawn on the maps within the general distribution (with the exception of salmon). For salmon, areas of known concentration are as described above.

If the Council chooses Alternative 3 of the EA more staff work is needed to both visually display (this pertains to salmon only) and verbally describe EFH in writing. However, enough information is included for the Council to make an informed decision.

Final Recommendation for Habitat Areas of Particular Concern

NMFS recommends the following general types of habitat be considered potential locations for habitat areas of particular concern (HAPC) for all FMP-managed species:

1. Nearshore areas of intertidal and estuarine habitats with submerged vegetation, rock, and other

substrates that may provide food and rearing for juvenile groundfish, salmon, and shellfish; spawning or mating areas for adults of some crab and groundfish species (e.g., Atka mackerel, yellowfin sole, red king crab); and migration route areas for adult and juvenile salmon; and that are sensitive to natural or human-induced environmental degradation, especially in urban areas and in other areas adjacent to intensive human-induced developmental activities. Examples include areas such as eelgrass beds, submerged aquatic vegetation, emergent vegetated wetlands, and certain intertidal zones. Many of these areas are unique and rare, and have a high potential to be affected by shore-based activities. The coastal zone is under the most intense development pressure, and estuarine and intertidal areas are limited in comparison with the areal scope of other marine habitats.

2. Offshore areas with substrates of high micro-habitat diversity which serve as cover for groundfish and shellfish. These can be areas with rich epifaunal communities (e.g., coral, anemones, bryozoans, etc.) or with large particle size (e.g., boulders, cobble). Complex habitat structures are considered most readily impacted by fishing activities.

3. Freshwater and estuarine habitat used for migration, spawning, and rearing of anadromous fish, especially in urban areas and in other areas adjacent to intensive human-induced developmental activities.

To identify specific HAPCs within the above general habitat types NMFS will apply the following criteria:

- the importance of the ecological function provided by the habitat;
- the extent to which the habitat is sensitive to human-induced environmental degradation;
- whether, and to what extent, development activities are, or will be, stressing the habitat; and
- the rarity of the habitat type.

For example, an eelgrass bed would be considered a HAPC if it were threatened by development activities.

NMFS recommends the general types of habitat listed above, those identified by the technical teams and those included in Section 11 of the draft EFH EA, be considered as habitat areas of particular concern within the five NPFMC FMPs, whenever one or more of the four criteria (ecological function, sensitivity, stress on the habitat, and rarity) occur. This HAPC evaluation process will be further clarified in a discussion paper that will be available at the June Council meeting. The discussion paper will outline the proposal process by which HAPC could be identified by the public and analyzed by the NPFMC/NMFS for inclusion in an FMP amendment. The discussion paper will also give examples of types of management measures that might address impacts to these habitats.

Final Recommendation on Research and Information Needs

The Alaska Region EFH Core Team has developed a draft strategic framework with which to evaluate activities in the Alaska Region with respect to attaining NMFS habitat goals. To determine where investment of funds and resources should be directed, the framework considers the relative progression or status of the respective FMP species groups in terms of knowledge of habitat requirements, habitat management, and condition of habitat. Briefly, the framework identifies activities that would address the

Level 0 life stages where they are likely to occur in habitat at risk; identifies the means to improve management and compatibility of human activities that affect the critical freshwater habitat of salmon; and identifies ways to evaluate and minimize effects of NMFS managed fisheries on EFH. The NMFS Core Team and Habitat Conservation Division will continue to develop the framework into an effective document.

Individual technical team reports indicate specific management, habitat, and ecological requirements that correspond to research needs in areas at risk. NMFS recommends that these research needs, as well as those identified in the EFH habitat assessments, EFH summary documents and Section 10 of the draft EA, be included in the EFH FMP amendments and pursued by NMFS to enhance knowledge of EFH. NMFS recommends the research needs identified for each FMP by the technical teams (summarized in Section 10 of the DRAFT EFH EA) and the following research needs:

1. Surveys and studies of nearshore pelagic and benthic areas are needed to determine their use by a variety of species, including Atka mackerel, Pacific cod, pollock, rockfish, sablefish, octopus, flatfishes, salmon, crabs, scallops, and juveniles and larvae of all species and forage species considered in NPFMC FMPs.

2. In salmon freshwater habitat, knowledge and management tools are needed for use in conserving or restoring habitat areas of particular concern.

3. Information on habitat distribution, in conjunction with fish distribution, is needed to determine species' habitat requirements and utilization. Information on the extent and distribution of complex habitat types susceptible to bottom fishing will greatly improve the ability to evaluate the potential of a fishery to physically alter bottom habitat and evaluate proposed measures to minimize impacts on EFH. To acquire this information, the Core Team recommends increased support to acquire information on detailed bottom topography and bottom type distribution on the continental shelf and slope.

4. Research necessary to raise the level of information known on a species life stage from Level 0 or 1 to Level 2 or higher.

Endorsement of Identified Fishing and Non-Fishing Threats and Cumulative Impacts Analysis of these Activities

A description and identification of fishing and non-fishing threats is included in the EFH EA at Sections 9.1 and 9.2, respectively. A cumulative impacts analysis of these activities is included in the draft EFH EA at Section 9.4. NMFS endorses the statements made and conclusions reached concerning fishing and non-fishing threats and the cumulative impacts of those activities presented in the draft EFH EA.

Non-fishing adverse impacts to EFH in Alaska identified and discussed include: dredging, fill, excavation, marine mining, fish processing waste, timber harvest, non-point source pollution including urbanization, point source pollution, hazardous material, mariculture, oil and gas activities, hydroelectric projects, marine traffic, and natural adverse impacts. Habitat protection recommendations are summarized in Section 9.1.3 of the EA.

Identification of fishing threats to EFH is discussed in Section 9.2 of the EA. This Section reviews the effects of fishing gear (trawl, dredge, longline, pot and salmon fishing gear) on benthic communities.

Fishery management options that may prevent, mitigate or minimize adverse effects from fishing may include, but are not limited to: fishing equipment restrictions, time/area closures, and harvest limits. Current and planned research on fishing gear and habitat interactions in the North Pacific is summarized in Section 9.2.2 of the draft EA.

Recommendation for Review and Revision of EFH Components of FMPs

The interim final rule states that the Council and NMFS should periodically review the EFH components of each FMP, including an update to the fishing gear impacts assessment of the FMPs. To accomplish this, the original EFH FMP amendment should include a provision requiring a review of the FMP's EFH information in light of new information and the preparation of another EFH FMP amendment to incorporate this new EFH information, if appropriate. The schedule for this review should be based on an assessment of both the existing data and expectations when new data will become available. This information should be reviewed as part of the annual Stock Assessment and Fishery Evaluation (SAFE) report. Furthermore, the interim final rule states that a complete review of EFH components should be conducted as recommended by the Secretary at least once every 5 years.

To incorporate the regulatory guidelines requirement for review and revision of EFH FMP components, NMFS recommends the following:

- First, NMFS recommends that the Council conduct a complete review of all the EFH components of each FMP once every 5 years and that the Council amend those EFH components of any or all FMPs to include relevant new information. Second, NMFS recommends that, in between five-year comprehensive reviews, the Council utilize its annual FMP amendment cycle to solicit proposals on HAPCs and/or conservation and enhancement measures to minimize the potential adverse effects from fishing. Proposals that the Council endorses should be developed independent of the five-year comprehensive EFH review cycle.
- Third, NMFS recommends that an annual review of existing and new EFH information be conducted and this information be provided to the Plan Team for their review during the annual SAFE report process. This information could be included in the "Ecosystems Considerations" chapter of the SAFE report.
- Fourth, NMFS recommends that research and information needs be incorporated into a Strategic Investment Framework developed by the EFH Core Team and updated annually. This framework can be used as a management tool to prioritize budget requests and to prioritize recommendations for expenditures of EFH funds.

Endorsement of Identification of Important Prey Species

NMFS endorses the statements made and conclusions reached concerning important prey species presented in the technical team habitat assessments and in Section 7.0 of the draft EFH EA. Prey species are identified in the individual species reports in the technical team habitat assessments where the information was available. The diet or prey of the FMP species was included as part of the tables that summarized vital life history information for each species.

Section 7.0 of the draft EFH EA discusses important prey species for forage fish and several species of GOA and BSAI groundfish. Forage fish species are abundant fishes that are preyed upon by marine mammals, seabirds and other commercially important groundfish species. Forage fish perform a critical role in the complex ecosystem functions of the Bering Sea and Aleutian Islands management area and the

Gulf of Alaska by providing the transfer of energy from the primary or secondary producers to higher trophic levels. The forage fish species category would include all species of the following families:

Osmeridae (eulachon, capelin and other smelts),
Myctophidae (lanternfishers),
Bathylagidae (deep-sea smelts).
Ammodytidae (Pacific sand lance).
Trichodontidae (Pacific sand lance),
Philidae (gunnels),
Stichaeidae (pricklebacks, warbonnents, eelblennys, cockscombs and shannys),
Gnostomatidae (bristlemouths, lightfishes, and anglemouths), and
the Order *Euphausiacea* (krill).